

WHAT IS CLAIMED IS:

1. A system for configuring one or more devices to customize a lab network in one or more participating facilities for testing scenarios using those devices, comprising:

a language subsystem for creating a network topology description for a scenario;

a scenario scheduling subsystem for scheduling a facility to execute the scenario and for reserving one or more requested devices to be utilized in executing the scenario; and

a lab management subsystem for executing the scenario.

2. The system of Claim 1, wherein the language subsystem utilizes an XML-based language to describe the network topology description.

3. The system of Claim 2, wherein the network topology description includes any of network topology information, device and interface configuration information, and condition state information of the topology and devices.

4. The system of Claim 2, wherein the XML-based language is a Network Description Language.

5. The system of Claim 1, wherein the language subsystem is accessible via a web browser application.

6. The system of Claim 5, wherein the web browser application includes an integrated visual tool that allows a user to create a scenario by drawing a network topology using the visual tool, such that the drawn network topology is automatically translated into a scenario that can be executed by the lab management subsystem.

7. The system of Claim 6, wherein the visual tool is integrated with the web browser application as a Java applet.
8. The system of Claim 1, wherein the language subsystem comprises a schema for formally defining an XML-based language to describe the network topology description, and a parser for interpreting language expressions and determining whether those expressions are valid for creating a scenario description.
9. The system of Claim 8, wherein the language subsystem further comprises a set of extensions for interfacing with a scenario description creation tool for translating objects created by the scenario description creation tool into the XML-based language.
10. The system of Claim 9, wherein additional objects are created using any of a standard text or XML editor.
11. The system of Claim 9, wherein the scenario description creation tool is Visio.
12. The system of Claim 1, wherein the scenario scheduling subsystem comprises a global scheduler for maintaining scheduling information relating to all of the participating facilities in an associated global schedule database, and a global inventory database for maintaining information relating to all of the devices within the participating facilities.
13. The system of Claim 12, wherein the global scheduler interfaces with a local scheduler located in respective ones of the participating facilities for maintaining scheduling information relating to that facility in an associated local schedule database, and a local inventory database for maintaining information relating to all of the devices within that facility.

14. The system of Claim 12, wherein the scenario scheduling subsystem is accessible via a web browser application.

15. The system of Claim 14, wherein the web browser application accesses the scenario scheduling subsystem via a Java servlet.

16. The system of Claim 12, wherein the scenario scheduling system further comprises an authentication system for authenticating users accessing the scheduling system to ensure that only those users having valid access can request scheduling of scenarios using the scenario scheduling system.

17. The system of Claim 1, wherein each participating facility includes its own lab management subsystem.

18. The system of Claim 1, wherein the lab management subsystem comprises a local scheduler for maintaining scheduling information relating to an associated facility in an associated local schedule database, a scenario manager for interpreting and executing scheduled scenarios, and an inventory manager for interacting with the scenario manager to retrieve description information about the devices maintained in a local inventory database and for configuring the devices in accordance with the description information to enable the devices to be used in the scenario.

19. The system of Claim 18, wherein the lab management subsystem further comprises a device controller for managing the operation of the one or more devices utilized in executing the scenario, a proxy server for providing access to device consoles enabling authorized users to control the devices during the executing scenario, a switch controller for controlling switching systems used during the

executing scenario, and an OS/Image manager for maintaining an archive of system images in an associated image database and delivering the system images to devices under control of the scenario manager.

20. The system of Claim 19, wherein a lab maintenance client interfaces with the lab management subsystem enabling remote control of the lab management subsystem and remote monitoring of the participating facilities.

21. The system of Claim 1, further comprising a scenario archive subsystem for archiving custom created scenarios for reuse in an associated archive database.

22. A system for configuring one or more devices to customize a lab network in one or more participating facilities for testing scenarios using those devices, comprising:

    a language subsystem for creating a network topology description for a scenario;

    a scenario scheduling subsystem for scheduling a facility to execute the scenario and for reserving one or more requested devices to be utilized in executing the scenario;

    a lab management subsystem for executing the scenario; and

    a scenario archive subsystem for archiving the scenario for reuse.

23. The system of Claim 22, wherein the language subsystem utilizes an XML-based language to describe the network topology description.

24. The system of Claim 23, wherein the XML-based language is a Network Description Language.

25. The system of Claim 22, wherein the scenario scheduling subsystem comprises a global scheduler for maintaining scheduling information relating to all of the participating facilities in an associated global schedule database, and a global inventory database for maintaining information relating to all of the devices within the participating facilities.

26. The system of Claim 25, wherein the global scheduler interfaces with a local scheduler located in respective ones of the participating facilities for maintaining scheduling information relating to that facility in an associated local schedule database, and a local inventory database for maintaining information relating to all of the devices within that facility.

27. The system of Claim 22, wherein each participating facility includes its own lab management subsystem.

28. The system of Claim 22, wherein the lab management subsystem comprises a local scheduler for maintaining scheduling information relating to an associated facility in an associated local schedule database, a scenario manager for interpreting and executing scheduled scenarios, and an inventory manager for interacting with the scenario manager to retrieve description information about the devices maintained in a local inventory database and for configuring the devices in accordance with the description information to enable the devices to be used in the scenario.

29. The system of Claim 28, wherein the lab management subsystem further comprises a device controller for managing the operation of the one or more devices utilized in executing the scenario, a proxy server for providing access to device consoles enabling authorized users to control the devices during the executing scenario, a switch controller for controlling switching systems used during the executing scenario, and an OS/Image manager for maintaining an archive of system

images in an associated image database and delivering the system images to devices under control of the scenario manager.

30. A system for configuring one or more devices to customize a lab network in one or more participating facilities for testing scenarios using those devices, comprising:

- means for creating a network topology description for a scenario;
- means for scheduling a facility to execute the scenario and for reserving one or more requested devices to be utilized in executing the scenario; and
- means for executing the scenario.

31. The system of Claim 30, further comprising means for archiving the scenario for reuse.

32. A method for configuring one or more devices to customize a lab network in one or more participating facilities for testing scenarios using those devices, the method comprising the steps of:

- creating a network topology description for a scenario;
- scheduling a facility to execute the scenario and reserve one or more requested devices to be utilized in executing the scenario; and
- executing the scenario.

33. The method of Claim 32, wherein the creating step includes using a visual tool application to create the scenario by drawing a network topology, and automatically translating the network topology into a scenario that can be executed by a lab management subsystem.

34. The method of Claim 32, wherein the scheduling step includes accessing a scenario scheduling subsystem to schedule a scenario request, and wherein the

scenario scheduling subsystem determines a facility and one or more devices to be used to fulfill the scenario request.

35. The method of Claim 32, wherein the executing step includes retrieving description information about devices to be used in executing the scenario, configuring the devices in accordance with the description information to enable the devices to be used in the scenario, and managing the operation of the devices during the executing scenario.

36. The method of Claim 32, further comprising the step of archiving the executed scenario for reuse.

37. A method for executing a custom scenario in a remote lab during a test session, comprising the steps of:

- designing a network topology description for a scenario;
- scheduling a reservation for a session in which to execute the scenario;
- reserving one or more devices in the remote lab;
- configuring the devices in accordance with the topology description;
- accessing the devices in order to remotely control the devices during the execution of the scenario; and
- executing the scenario.